

Appl. No. : **10/678,766**
Filed : **October 2, 2003**

REMARKS

Claims 1-24 and 26-35 are pending. Of these, Claims 1, 22 and 24 have been amended to clarify that a metal silicon oxide (MSiO_x) film is formed in each deposition cycle and that the deposition cycle is repeated multiple times in a row or consecutively to form a MSiO_x film. Claim 2 has been cancelled and Claims 10, 14 and 16-18 have been amended in view of the changes to Claim 1. No new matter is added by these amendments. Support can be found, for example, in paragraph [0042] and Example 2 of the specification as filed.

Claim Rejections Under 35 U.S.C. 103(a)

Claims 1-9, 11-18 and 21-33 remain rejected under 35 U.S.C. §103(a) as being unpatentable over “Surface Chemistry for Atomic Layer Growth” by George et al. (“George”) in view of U.S. Patent Nos. 6,015,590 to Suntola et al. (“Suntola”) and 6,313,035 to Sandhu et al (“Sandhu”).

Applicants continue to maintain that there is a lack of motivation for the asserted combination, that the asserted combination fails to teach each and every element and that the non-obviousness of the claims is supported by the unexpected results obtained. Nevertheless, after discussing the case with the Examiner and without acquiescing in the rejection and the Examiner’s arguments, Applicants have decided to amend the claims such that they are clearly outside of the scope of the teachings of the cited references. As discussed with the Examiner, Claim 1 has been amended to indicate that the ALD process comprises multiple consecutive deposition cycles that each deposit only a metal silicon oxide (MSiO_x). Applicants note that although the claims now indicate that each consecutive deposition cycle forms MSiO_x, the deposition cycle itself remains open ended so long as MSiO_x is formed by the complete deposition cycle. Similar amendments have been made to Claims 22 and 24.

George only discloses deposition of single, binary oxides and has no recognition that *metal silicon oxide* could be formed by ALD. As a result, George has no teaching or suggestion that would motivate one of skill in the art to attempt to make metal silicon oxide films or that would suggest how to make metal silicon oxide films by ALD. Thus, George does not provide any motivation to combine its teachings with those of Sandhu. While George mentions superlattices, this does not teach or suggest deposition of *metal silicon oxide* as claimed. In

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addition, while the Examiner apparently asserts that, in the deposition of a superlattice comprised of metal oxide layers and silicon oxide layers, the transition between the two types of layers may lead to one cycle in which a layer of metal silicon oxide is inherently formed at the interface between the layers, the claims have been amended to clarify that MSiO_x is deposited in *multiple consecutive* deposition cycles. Even given this broad interpretation, multiple consecutive deposition cycles that deposit MSiO_x would not be used in forming the layer transitions of a superlattice.

In view of the lack of teaching in George or the secondary references of atomic layer deposition methods for depositing metal silicon oxide as claimed, Applicants respectfully submit that the rejections under 35 U.S.C. §103 should be withdrawn.

Conclusion

In view of the arguments presented above, Applicants submit that the present application is in condition for allowance and respectfully request the same. If any issues remain the Examiner is cordially invited to contact Applicants' representative at the number provided below in order to resolve such issues promptly.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

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By:



Andrew N. Merickel
Registration No. 53,317
Attorney of Record
Customer No. 20,995
(415) 954-4114

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